

# FAST ACTION TO REDUCE THE RISKS OF CLIMATE CHANGE: U.S. OPTIONS TO LIMIT SHORT-LIVED CLIMATE POLLUTANTS



February 2012

Short-lived climate pollutants such as soot, methane and hydrofluorocarbons (HFCs) account for 30 to 40 percent of global warming to date. Targeted efforts to reduce these emissions can slow the pace of global warming and moderate climate impacts already underway, including the melting of sea ice and glaciers. By reducing local air pollution, such measures would also produce substantial public health benefits and reduce crop losses, particularly in developing countries. The factsheet outlines ways to further reduce U.S. emissions of these short-lived pollutants.

Through a broad range of efforts – including voluntary programs to reduce methane emissions, regulation of diesel emissions, and the development of alternatives to HFCs – the United States has made substantial progress in reducing short-lived climate pollutants, also called short-lived climate forcers. Options to strengthen these domestic efforts including the following:

## FEDERAL LEADERSHIP IN REDUCING SHORT-LIVED CLIMATE POLLUTANTS

A 2009 Executive Order, *Federal Leadership in Environmental, Energy, and Economic Performance* (E.O. 13514), directs agencies across the federal government to compile inventories of their greenhouse gas emissions, and to set targets and develop plans for reducing those emissions through 2020. HFCs and methane (but not black carbon) are explicitly included among the greenhouse gases covered under E.O. 13514. The Administration could instruct the Federal Environmental Executive charged with implementing the Executive Order to provide guidance directing all agencies to place a priority on identifying actions aimed at reducing emissions of all short-lived climate pollutants. For example, agencies could be encouraged to purchase

products made without HFCs, to retrofit their dirtiest diesel engines, and to take actions to facilitate capture of methane emissions from existing gas and oil wells and coal mines on federal lands.

An inter-agency Short-Lived Climate Pollutant Task Force could develop tools to help agencies develop and implement plans to reduce these compounds.

## METHANE REDUCTIONS FROM OIL AND GAS PRODUCTION AND PROCESSING

Natural gas is mostly methane, and the natural gas industry is the single largest source of methane emissions from the United States, due primarily to leaks and intentional routine releases of gas. In July 2011, EPA proposed new source performance standards and hazardous pollutant regulations for oil and gas production and gas processing, transmission and storage facilities. While primarily aimed at reducing smog-forming and toxic pollutants, the proposed rules also have the indirect effect of reducing methane emissions in significant amounts. By capturing and beneficially using methane emissions, EPA estimates that the proposed rules would result in a net cost-savings to industry. If finalized as proposed, the rules will begin to address one

of the concerns about the extent of methane emissions from hydraulic fracturing, or fracking, a segment of the industry that is rapidly growing.<sup>1</sup> EPA estimates the proposed rules would reduce methane emissions from the oil and gas sector by 26 percent, or 3.4 million tons – equal to 65 million metric tons of carbon dioxide.<sup>2</sup>

EPA could maximize cost-effective methane reductions in finalizing the proposed rules. However since these rules apply only to new and modified facilities, EPA could take additional action to address methane emissions from existing facilities. EPA could issue new regulations directly regulating methane emissions from new and existing facilities or it could expand its Natural Gas Star program to include voluntary reduction targets by participating companies at their existing facilities.

## **METHANE REDUCTIONS AT MUNICIPAL SOLID WASTE LANDFILLS**

Solid waste landfills are the third largest source of methane emissions in the United States, accounting for 17 percent of U.S. methane emissions and almost 2 percent of our total greenhouse gas emissions.<sup>3</sup> In March 1996, EPA issued final rules regulating the emission of air pollutants from municipal solid waste landfills. This rule substantially reduced smog-forming and hazardous pollutants. While methane emissions are not regulated directly, the 1996 performance standards had an important indirect effect in reducing methane emissions from the largest landfills. That is because under these standards, landfills are required to collect and combust their “landfill gas” (LFG) if they have a design capacity of more than 2.5 million tons and more than 2.5 million cubic meters of waste. EPA estimated that the rule would reduce methane emissions by 37 million metric tons of carbon dioxide equivalent, even though it impacts less than 5 percent of all landfills.

The most straightforward way to significantly reduce methane emissions from this sector would be to bring more landfills into the existing regulatory scheme by lowering both the emission threshold and the capacity thresholds to reflect the fact that today, landfills as small as 1 million metric tons design capacity have successfully implemented LFG collection systems. The 1996 rule has been in place unchanged far longer than the 8-year review period called for under the Clean Air Act and new

standards are in order. EPA’s Landfill Methane Outreach Program estimates that an additional 500 sites represent potentially attractive opportunities for low cost capture and beneficial use of methane emissions. These sites have a potential for methane reductions of 13 million metric tons of carbon dioxide equivalent.

Under Section 111 of the Clean Air Act, EPA could revise this rule to double the number of sites that are required to capture methane emissions and to work with states to facilitate effective implementation of this requirement.

## **HFC REDUCTIONS FROM VEHICLE AIR CONDITIONERS**

Section 612 was included in the Clean Air Act to ensure the health and safety of alternatives being developed and used to replace chlorofluorocarbons (CFCs) and other ozone-depleting substances. While HFC-134a was an important alternative in allowing for an accelerated phase-out of CFC-12, it has a global warming potential of 1300. With the development of more environmentally benign alternatives, it is now time for EPA to delist HFC-134a as an acceptable alternative. In February 2011, EPA accepted as complete a petition to delist HFC-134a for use in new air conditioners for light-duty vehicles. However, it did not establish a timetable for taking action and did not address the use of HFC-134a in other applications that should also be delisted.

HFCs currently represent less than 2 percent of the nation’s GHG emissions. They are expected to double by 2020. HFC-134a from auto air conditioning is by far the largest source of HFC emissions.

EPA should propose and finalize a rule as soon as feasible delisting HFC-134a for use in new car air conditioners on a timeframe consistent with the availability of adequate supplies of the alternatives. It also should review other significant uses where HFC-134a currently is approved (e.g., aerosols and other refrigerant uses) and determine whether or not any of these uses should also be delisted.

## **HFC REDUCTIONS FROM APPLIANCES**

In December 2010, EPA proposed a rule to lower the leak rates that trigger repair requirements for comfort

cooling, commercial refrigeration, and industrial process refrigeration and air conditioning equipment that use ozone-depleting refrigerants. While reducing leaks of ozone-depleting gases from existing equipment remains an important objective, these refrigerants have or are in the process of being replaced in all of these types of new equipment largely with HFCs. Emissions from HFCs escaping from refrigeration systems account for up to 20 percent of total emissions of these compounds. Under section 608 of the Clean Air Act, the scope of the pending regulations could be expanded from ozone-depleting substances to include HFCs when used as the refrigerant in these types of equipment.

This initiative would require EPA to propose an amendment to the agency's December 2010 proposal. The revised proposal would impose maximum leakage rates when HFCs are used as the refrigerant in these refrigeration and air conditioning applications.

## BLACK CARBON REDUCTIONS FROM EXISTING DIESEL VEHICLES

With an atmospheric lifetime of weeks, reductions in black carbon can have the greatest near-term impact on slowing climate change. While recently enacted particulate matter standards require *new* diesel engines to reduce their black carbon emissions by 99 percent below uncontrolled levels, *existing* diesel vehicles and equipment will remain a significant source of emissions over the next few decades. However, existing retrofit technologies (primarily diesel particulate filters) can substantially reduce black carbon emissions from existing equipment. Congress recognized the importance of these efforts to reduce emissions from existing diesel engines when it passed the Diesel Emission Reduction Act (DERA) of 2010. With broad support from industry and environmental groups, this law authorized appropriations of up to \$100 million annually for programs (originally created under the Energy Policy Act of 2005) aimed at reducing diesel emissions for fiscal years 2012 through 2016. Innovative funding and state grant programs have been supported under DERA. While funding for this program was eliminated in FY2012, it has been reinstated in the President's budget request for FY2013.

## ADDITIONAL MEASURES

Additional alternatives that should be further explored include both new regulatory measures and expansion of voluntary programs. EPA has begun to use the Clean Air Act to directly regulate greenhouse gas emissions and is required under the Act to take additional actions. For example, it could issue specific standards requiring methane reductions from landfills, natural gas production, distribution and storage, and other major sources. It could also require reductions in black carbon emissions from large diesel engines when they are undergoing major rebuilds. The agency could strengthen regulatory measures restricting the use of HFCs in those sectors where alternatives are becoming available applications. EPA could also expand programs to capture and use methane from coal-bed mining and agricultural sources and strengthen voluntary programs to recover and destroy CFCs, HCFCs, and HFCs from discarded appliances.

---

### Other C2ES Resources:

*Bodansky, Daniel, [Multilateral Climate Efforts Beyond the UNFCCC](#), November 2011.*

*Bachmann, John, [Black Carbon: A Science/Policy Primer](#), 2009.*

*[What is Black Carbon?](#), April 2010.*

## ENDNOTES

---

1 The most important aspect of the proposed rules are new requirements that operators using hydraulic fracturing on new or modified natural gas wells capture the largest amounts of natural gas that is often emitted into the air during the fracking process. While the rules don't directly regulate greenhouse gases, they will result in substantially reduced methane emissions from fracking, and therefore reduce the climate impacts of this rapidly expanding source of natural gas.

2 Methane has a 100-year global warming potential of 25 times that of carbon dioxide.

3 USEPA, *Inventory of US GHG Emissions and Sinks: 1990-2009* (April 2011), at ES-5.



The Center for Climate and Energy Solutions (C2ES) is an independent nonprofit organization working to promote practical, effective policies and actions to address the twin challenges of energy and climate change.